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EXAMINER	
DIVINE, LUCAS	
ART UNIT	**PAPER NUMBER**
2624	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/824,902	HARPER ET AL.	
	Examiner	Art Unit	
	Lucas Divine	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-24,26-29,31-37 and 39-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-24,26-29,31-37 and 39-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/19/05 has been entered.

Response to Amendment

2. Claims 1 – 3, 6 – 24, 26 – 29, 31 – 37, and 39 – 42 are pending.

Response to Arguments

3. Arguments against Sakuma regarding claims 1, 13, 26, and 34 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Pardo et al. (US 6456387) and Toda (US 6317217).

4. Applicant's arguments against Motamed have been fully considered but they are not persuasive.

With respect to applicant's arguments on page 12 directed to using Motamed as a reference to teach quickly performing a RIP of the image to estimate toner.

In reply, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Motamed clearly teaches performing a fast, low-resolution RIP to estimate resource usage and that is only what is relied on to teach in the new rejections below.

Claim Objections

5. Claims 1, 13, 26, and 34 are objected to because of the following informalities: 'overlayed' is more correctly spelled as 'overlaid'. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1 – 3, 13, 22, 26 – 29, 34, 39, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pardo et al. (US 6456387) and Toda (US 6317217).

Regarding claims 1 and 26, Pardo teaches **a method for ascertaining resource requirements of a print job sent to a printer** (for best permitting an image to be printed [col. 1 lines 23-24]), **the method including:**

creating a document of the print job and reading the print job into memory from the host (col. 4 lines 41-49);

formatting (steps S602 and S603, Fig. 6 take the PDL in printer memory and format the document finally in the DART representation [col. 5 lines 8-33) **the document in the memory into a print format consistent with a layout of the document on print media** (see band examples of Fig. 5, wherein the DART representation is a dynamic, but consistent format for the layout of the document)**, the formatted document having a document area** (inherent to a document is the document area, e.g. Fig. 5)**;**

overlaying (S604, Fig. 6, wherein the image is banded, thus overlaying windows the size of bands) **a sample window over a portion of the formatted document in the memory, the window having a window area smaller than the document area** (band is generally 1/27 of the entire document [col. 5 line 46])**;**

analyzing (S605, Fig. 6, wherein each portion is analyzed for predicting the resource usage) **the portion of the formatted document overlayed by the sample window to determine resource requirements of the portion; and**

ascertaining (S606, Fig. 6(b) [col. 9 lines 31-40; col. 6 lines 9-10 and lines 46-64] wherein based on the individual bands, the determination is made as to whether there is enough of the resource to handle the full bit map image) **the resource requirements of the print job based on the resource requirements of the portion** (the resource determination is based on all of the portions)**.**

Pardo does not specifically teach a print driver or that the print job is transferred directly into memory from the print driver.

Toda teaches the host computer (as in Pardo) 101 as generating PDL data with a printer driver (in 1012; col. 4 lines 39-40) and the data is transferred directly to the printer memory 103 (col. 4 lines 45-46). Further, just as in Pardo, the data is processed and banded.

Thus the features of Toda of the host computer and transferring directly into printer memory would have been obvious to have in the system of Pardo. Pardo alludes to them but does not specifically discuss them because they would have been obvious to one of ordinary skill in the art as Toda teaches. The motivations for doing so would have been to have a remote unit to create the PDL data (otherwise there would be nothing to print) and to have the data arrive at the printer in the shortest time possible (directly from printer driver).

Regarding claims 2 and 27, which depends from claims 1 and 26, Pardo teaches **the document includes an image** (e.g. col. 9 line 33).

Regarding claims 3, 28, and 29, which depends from claims 1 and 26, Toda teaches **the memory is a computer readable buffer** (ref. no. 103).

Regarding claims 13 and 34, the method steps of method claim 13 (and program code of 34) are the same as those of claims 1 and 26 except the limitation(s) below. For those that are the same, they are rejected for the same reasons as set forth in the rejection of claim 1 above. Pardo further teaches that the DART generation is not at a full resolution level (thus lower) in col. 3 line 36, wherein the DART representation is not a full raster [full resolution] representation. Pardo also teaches the comparing of the resource requirements to the availabilities in step S606.

Regarding claim 22, which depends from claim 13, Pardo teaches **printing the print job if sufficient resources are available** (S622, Fig. 6 and its subsequent printing by print engine).

Regarding claims 39 and 41, which depend from claims 1 and 26, Pardo teaches that the **formatting is at a print resolution** (the DART format is used in printing at a resolution for correct image output [no loss is incurred if printed using data at that resolution]) and **that the analyzing is performed at the print resolution** (the predictions of S605 is done using the DART data, thus using data at the print resolution).

7. Claim 6, 21, 31, 40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pardo and Toda as applied to claims 1, 13, and 26 above, and further in view of Motamed et al. (US 2002/0060801).

Regarding claims 6, 31, and 21, which depend from claims 1, 26, and 13, while Pardo specifically teaches that the resource prediction of step S605 can be for any type of print resource (col. 7 lines 22-25), Pardo does not specifically teach that the resource prediction would perform a RIP of the sample window to determine window coverage.

However, Motamed teaches using a thumb RIP (paragraphs 12, 27) of an image area for toner estimation (resource prediction).

It would have been obvious to one of ordinary skill in the art to include the thumb RIP of Motamed in the prediction step of Pardo. Since Pardo does teach the ability to predict for other resources in their banding printing system, but does not go into detail on the implementations of such predictions for other types of resources, it would have been obvious to use a standard toner/consumable prediction process to do so (as in Motamed). The motivations for implementing the toner RIP in each band of the image would be to predict the resource usage for each band in a very high speed and less cost way. The system of Pardo is very concerned about

reducing usage of resources (e.g. CPU, memory, bandwidth) in predictions and operations, thus, providing a fast way to predict the resource usage of a consumable without using many system resources (p 12 of Motamed as example) would have been beneficial. Further, it is well known in printing systems to predict toner/consumable usage for letting the user know, ordering new consumables, etcetera. It would have thus been obvious as well that one type of resource prediction completed with the banding system of Pardo and Toda would have been toner/ consumables. Further, the system of Pardo teaches adjusting based on resource availability (col. 8 lines 9-11, S617, S621) which is a type of adjustment made in toner/consumable systems when the resource isn't all available.

Regarding claims 40 and 42, which depend from claims 1 and 26, while Pardo specifically teaches that the resource prediction of step S605 can be for any type of print resource (col. 7 lines 22-25) and formatting is at a print resolution (the DART format is used in printing at a resolution for correct image output [no loss is incurred if printed using data at that resolution]), Pardo does not specifically teach that the analysis can be at a level lower than print resolution.

However, Motamed teaches using a thumb RIP (paragraphs 12, 27) of an image area for toner estimation (resource prediction). The thumb RIP is at a very low level, not acceptable as a print resolution.

It would have been obvious to one of ordinary skill in the art to include the thumb RIP of Motamed in the prediction step of Pardo. Since Pardo does teach the ability to predict for other resources in their banding printing system, but does not go into detail on the implementations of such predictions for other types of resources, it would have been obvious to use a standard toner/consumable prediction process to do so (as in Motamed). The motivations for

implementing the toner RIP in each band of the image would be to predict the resource usage for each band in a very high speed and less cost way. The system of Pardo is very concerned about reducing usage of resources (e.g. CPU, memory, bandwidth) in predictions and operations, thus, providing a fast way to predict the resource usage of a consumable without using many system resources (p 12 of Motamed as example) would have been beneficial. Further, it is well known in printing systems to predict toner/consumable usage for letting the user know, ordering new consumables, etcetera. It would have thus been obvious as well that one type of resource prediction completed with the banding system of Pardo and Toda would have been toner/ consumables. Further, the system of Pardo teaches adjusting based on resource availability (col. 8 lines 9-11, S617, S621) which is a type of adjustment made in toner/consumable systems when the resource isn't all available. Thus, the combination would include the analysis (prediction) at a lower than print resolution.

8. Claims 7 – 12 and 32 – 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pardo, Toda, and Motamed as applied to claims 6 and 31 above, and further in view of Sakuma (US 5663750).

Regarding claims 7 and 32, which depend from claim 6 and 31, while the combination of Pardo, Toda, and Motamed teach predicting the resource usage for toner/consumable as well as other resources for each band and then ascertaining the job requirements therefrom, the combination does not specifically teach that the method of ascertaining the whole job requirements is multiplying the window coverage by a factor related to the size of the smaller area to determine the page coverage.

Sakuma teaches multiplying the window coverage by a factor related to a size of the smaller area to determine the page coverage of the document (col. 4 lines 64-66).

It would have been obvious to one of ordinary skill in the art that one way to estimate the coverage for a whole page would have been to multiply the window coverage by the number of windows in the document as taught in Sakuma. Pardo even teaches that the window coverage is typically $1/27^{th}$ of the page, thus being further obvious to multiply by 27 to get the whole page estimation. The motivation for doing so would have been to more quickly estimate the total resource usage of the page than by adding up each window.

Regarding claims 8 and 33, which depend from claim 7 and 32, Sakuma teaches multiplying the page coverage by a number of pages in the task to determine job requirements (col. 4 line 66 – col. 5 line 2). It would have been obvious to one of ordinary skill in the art in the combination of claim 6 to perform this functionality. As above, the motivation for doing the multiplying would be to more quickly estimate the total resource usage for the job instead of adding up each page.

Regarding claims 9 – 12, which depend from claim 8, Sakuma teaches comparing (Fig. 9 step S33), executing if possible (Fig. 9 step S34), providing a message (Fig. 9 step S40), and securing more resources (col. 1 lines 22-25).

These tasks would have been obvious to one of ordinary skill in the art to have in a system that is predicting toner/consumable resource usage. In the current system of Pardo, adjustments are made when printing at high level is not possible (see S616 and around), as well as the comparing in step S606. But in a system that is also predicting toner/consumable usage, letting the user know so they can secure additional resources is important to fix the issue of

toner/consumable running out. Thus, the motivation would be to keep the resource levels at appropriate levels by letting a user know when it is running low.

9. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda and Pardo as applied to claim 13 above, and further in view of Sakuma.

Regarding claims 23 and 24, which depend from claim 13, while Pardo specifically teaches that the resource prediction of step S605 can be for any type of print resource (col. 7 lines 22-25), Pardo does not specifically teach that the resource is toner/consumable or how to handle such a prediction if it is not enough.

Sakuma teaches comparing the resource requirements of a consumable/toner system (Fig. 9 step S33), executing if possible (Fig. 9 step S34), providing a message (Fig. 9 step S40), and securing more resources (col. 1 lines 22-25).

These tasks would have been obvious to one of ordinary skill in the art to have in a system that is predicting toner/consumable resource usage. In the current system of Pardo, adjustments are made when printing at high level is not possible (see S616 and around), as well as the comparing in step S606. But in a system that is also predicting toner/consumable usage, letting the user know so they can secure additional resources is important to fix the issue of toner/consumable running out. Thus, the motivation would be to keep the resource levels at appropriate levels by letting a user know when it is running low.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toda and Pardo as applied to claim 13 above, and further in view of Motamed and Gormish et al. (US 5337362).

Regarding claim 14, which depends from claim 13, while Pardo specifically teaches that the resource prediction of step S605 can be for any type of print resource (col. 7 lines 22-25), Pardo does not specifically teach that the resource prediction would perform a RIP of the sample window or doing so at 50 DPI.

However, Motamed teaches using a thumb RIP (paragraphs 12, 27) of an image area for toner estimation (resource prediction).

It would have been obvious to one of ordinary skill in the art to include the thumb RIP of Motamed in the prediction step of Pardo. Since Pardo does teach the ability to predict for other resources in their banding printing system, but does not go into detail on the implementations of such predictions for other types of resources, it would have been obvious to use a standard toner/consumable prediction process to do so (as in Motamed). The motivations for implementing the toner RIP in each band of the image would be to predict the resource usage for each band in a very high speed and less cost way. The system of Pardo is very concerned about reducing usage of resources (e.g. CPU, memory, bandwidth) in predictions and operations, thus, providing a fast way to predict the resource usage of a consumable without using many system resources (p 12 of Motamed as example) would have been beneficial. Further, it is well known in printing systems to predict toner/consumable usage for letting the user know, ordering new consumables, etcetera. It would have thus been obvious as well that one type of resource prediction completed with the banding system of Pardo and Toda would have been toner/ consumables. Further, the system of Pardo teaches adjusting based on resource availability (col. 8 lines 9-11, S617, S621) which is a type of adjustment made in toner/consumable systems when the resource isn't all available.

The combination of Motamed, Pardo, and Toda does not specifically teach such a RIP at the low resolution of 50 DPI.

Gormish teaches reducing the resolution of an image to fifty dots per square inch in order to speed up processing (col. 9 lines 50-65).

It would have been obvious to one of ordinary skill that the low resolution RIP of Motamed could reduce images to 50 DPI as taught in Gormish. The motivations for doing so would have been to process the image data faster by providing an even lower resolution to analyze and to save memory in saving the image file (Gormish col. 9 line 53, wherein the low resolution allows for fast data manipulation and analysis and line 57, wherein 50 DPI provides a much smaller file than larger resolutions). Further 50 dpi is an even factor from most printing outputs (for example, 200 or 400 dpi) and would therefore be easy to compute with in generating a thumbnail RIP of Motamed. Further, 50 DPI is much lower resolution that the 300 and 600 DPI of Pardo (S617 and S619).

11. Claims s 15 – 20 and 35 – 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pardo and Toda as applied to claims 13 and 34 above, and further in view of Kanaya et al. (US 6517175).

Regarding claims 15 and 35, which depend from claims 13 and 34, while Pardo teaches the resource prediction of step S605 can be for any type of print resource (col. 7 lines 22-25), the combination of Pardo and Toda does not specifically teach providing the actual resource requirements of the print job.

Kanaya teaches estimating resource usage (S206) and providing actual resource requirements of the print job (Fig. 14 step S212, col. 22 lines 62-64, wherein the actual data of cumulative ejected ink is retrieved and stored in the memory for better predictions, other actual data provided by the system for estimating ink consumption are temperature, residual quality of ink, and others discussed in col. 22 lines 1-17).

It would have been obvious to one of ordinary skill in the art that one type of resource prediction in a printing system could be the prediction of toner/consumable usage (as taught in Kanaya) and making sure that the predictions/estimations are highly accurate. The motivations for doing so would have been to allow a user to most accurately know when the toner/consumable will be enough and when to procure more toner/consumable. Thus, the more accurate the predictions, the better the system operates and thus the obviousness to one of ordinary skill in the art.

Regarding claims 16, 17, 36, and 37, which depend from claims 15 and 35, Kanaya further teaches

comparing the actual resource requirements to the estimated resource requirements generating correction data in response thereto (col. 21 and 22 teach generating a correction coefficient for correcting errors in standard ejecting, factors that go into this correction coefficient are the actual data discussed in claim 15; col. 21 lines 63-65 teach various correction coefficients, including inherently the correction of calculated amount of ink vs. actual amount of ink ejected) and

adjusting the low resolution level analysis in response to the correction data (the equation in col. 21, lines 46-47, shows how the correction coefficient is used to adjust the sampling step above by adjusting the estimation of ink usage).

Regarding claims 18 – 20, which depend from claim17, the combined system of Pardo, Toda, and Kanaya inherently include that the print job includes images and text (inherent but examples can include images shown in Fig. 5 of Pardo and the ability to print text and have text in print jobs is shown in rendering characters 106 of Toda).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Moreau et al. (US 6903837) teaches method and device for predicting the quality of printing product available in a printer and necessary for printing a document.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Divine whose telephone number is 571-272-7432. The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lucas Divine
Examiner
Art Unit 2624

ljd

KING Y. POON
PRIMARY EXAMINER